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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/029,049

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David K. Chen

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DELPHI TECHNOLOGIES, INC.

M/C 480-410-202

PO BOX 5052

TROY, MI 48007

EXAMINER

CROSS, LATOYA I

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/029,049	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> LaToya I. Cross	<b>Art Unit</b> 1743	

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-19,21 and 23-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-19,21 and 23-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 23, 2006 has been entered.

### *Withdrawal of Rejections from Previous Office Action*

- The anticipation rejection over Wang et al is withdrawn in view of Applicants' statement that the instant invention and Wang et al were commonly owned at the time the invention was made.

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1, 2, 4-19, 21, 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of US patent 5,989,398 to Young et al, McCracken and Lenfers.

Applicants admit at page 1 of their specification that planar oxygen sensors generally comprise a pump cell, reference cell, sensor chamber, heater and ground plane electrode. Applicants further admit that it is typical to incorporate a temperature sensing feedback (temperature measurement device).

The limitations of the ground plane electrode having a sensing portion and a measuring portion of differing surface areas is not discussed in Applicants' admitted prior art.

Young et al teach a gas sensor comprising a pump cell (18), sensing element /sensor cell (12), first and second heaters (58, 50), thermometer/temperature measuring device (46) and an intermediate layer (54) providing an electrical ground plane. The ground plane layer has some sections having a different surface area than the others. See figure 3. It would have been obvious to one of ordinary skill in the art to incorporate the electrical ground plane of Young et al into the known devices discussed by Applicants to provide a gas measurement means that is suitable for monitoring gases (such as gas pollutants, sulfur dioxide and carbon monoxide).

With respect to the particular temperature measuring means, the admitted prior art does not discuss such.

McCracken et al teach an electronic temperature sensor comprising a terminal for receiving electrical power supplied to the sensor, a capacitor to serve as a filter for the output circuit, an electrical line for returning AC signals that will be converted into a temperature reading, a voltage to frequency converter and a voltage regulating network. See col. 3, line 66 – col. 4, line 18; col. 6, lines 16-48.

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McCracken et al teach that the temperature sensor has a very rapid response to changes in the temperature and provides a wide range of readings with a high degree of accuracy.

Lenfers teach a temperature measurement device and method for determining temperature in a planar oxygen probe. Lenfers et al teach temperature can be measured in a planar oxygen sensor by providing two spaced terminals for measuring electrical resistance. The electrical resistance of electrodes having two terminals is simultaneously measured. The resistance value of the electrodes changes depending on the temperature. Since the resistance/temperature behavior of the electrodes is known, the actual temperature existing in the oxygen probe can be deduced therefrom (col. 3, line 60 – col. 4, line 22).

It would have been obvious to one of ordinary skill in the art to incorporate a temperature sensor, such as that taught by McCracken et al, into the known sensor described by Applicants to provide a means for rapid, accurate temperature readings. Further, it would have been obvious to one of ordinary skill in the art to determine temperature, using the sensor of Young et al modified by McCracken et al, using the method of Lenfers, wherein the temperature is deduced from the changes in electrical resistance of the electrodes having two terminals.

#### *Response to Arguments*

4. Applicant's arguments filed November 25, 2005 have been fully considered but they are not persuasive. Applicants argue that neither of the cited references teach a ground plane electrode adapted for temperature measurement, stating that in Young et al, the temperature measurement device are separate and distinct from the ground plane electrode. In response, the Examiner first notes that Applicants' claims do not require a ground plane electrode adapted for temperature measurement. Further, in the instant invention, the temperature measurement device is also separate and distinct from the ground plane electrode. See specification at paragraphs 15, 21 and 23 where Applicants describe the planar oxygen sensor, which contains the ground plane electrode, as a separate component from the

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temperature measurement device. The two are later described as being “communicated” together via the measuring leads of the ground plane electrode. The Examiner notes a similarly described device in Young et al. In Young et al, the temperature measuring device (46) is communicated with the ground plane electrode (54) by way of vias (28, 68). Young et al teaches that the vias (28) allow oxygen flow through the layers of the device, while vias (68) are electrical vias that establish electrical contact being the various layers. Thus, the temperature measuring device (46) is in communication with the ground electrode layer (54).

With respect to the ground plane electrode being disposed between the “gas sensing arrangement” and the heating device, it should be noted that Young et al teaches such. As shown in figure 3, top layer (44) denotes the sensing layer. Ground electrode layer (54) is disposed between sensing layer (44) and primary heaters (58,62).

With respect to the McCracken reference, the reference was cited merely for its teaching of the particulars of a temperature measuring device to be in gas sensors. The Lenfers reference was cited for its teaching of a process for measuring temperature in a gas sensor by observing the changes in the electrical resistance across two terminals.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LaToya C. Younger whose telephone number is 571-272-1256. The examiner can normally be reached on Monday-Friday 10:30 a.m. - 8:00 p.m. and on alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700